

# Important Advances in Clinical Medicine

## *Epitomes of Progress -- Orthopedics*

*The Scientific Board of the California Medical Association presents the following inventory of items of progress in Orthopedics. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole is generally given for those who may be unfamiliar with a particular item. The purpose is to assist the busy practitioner, student, research worker or scholar to stay abreast of these items of progress in Orthopedics which have recently achieved a substantial degree of authoritative acceptance, whether in his own field of special interest or another.*

*The items of progress listed below were selected by the Advisory Panel to the Section on Orthopedics of the California Medical Association and the summaries were prepared under its direction.*

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### Total Hip Replacement

In 1958, Charnley, realizing the need for a more reliable hip arthroplasty, began using self-curing methyl methacrylate as a "cement" to hold the acetabular and femoral components. The methyl methacrylate is used as a grouting, filling the interstices within the bone and thereby providing a hold for the mechanical components.

Although acrylic has been used for many years in endoprostheses, the present use requires polymerization within the body and is considered by the Food and Drug Administration to represent a new utilization of the material and, as such, to require a Claim for Exemption for a New Drug.

The components of a total hip replacement are a metallic femoral head prosthesis with a socket of either high density polyethylene, or the metal used in the prosthesis. The components are in-

serted separately, each being "cemented" into the prepared area. The results, to date, have been most encouraging; the procedure providing excellent motion and pain relief. There are, however, definite risks entailed in the utilization of acrylic as a cement. The free monomer, which is mixed with the polymer, is toxic to the liver, kidney and heart of animals, and is probably responsible for the transient hypotensive episodes that occasionally occur following introduction of the material. Also, many surgeons performing the procedure have noted increased incidence of wound infection. As a consequence, great interest has developed in clean air operating rooms employing filtering systems which have the ability to remove bacteria and dust from the air.

Although generally believed to be the most significant advance in orthopedic hip surgery, it

is probable that total prosthetic replacement for advanced coxarthrosis as developed by Charnley and others, may be but the forerunner of further advances in the field of total joint replacement.

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#### REFERENCES

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Charnley J (guest editor): Total hip replacement. *Clin Orthop* 73:1-344, 1970

### Surgical Treatment of Rheumatoid Arthritis in the Hands

Less than one third of patients having rheumatoid arthritis may be helped by surgical operation. Destruction of the wrist, small joints and tendons of the hand can be arrested by excising thick, granulomatous synovium. Synovectomy may relieve pain and prevent subsequent deformity, but often results in some limitation of motion.

Rheumatoid synovium surrounding the flexor tendons beneath the transverse carpal ligament frequently causes compression of the median nerve, resulting in the so-called carpal tunnel syndrome. Surgical excision of the synovium, thereby decompressing the nerve, usually will relieve symptoms of the syndrome. The function of extensor and flexor tendons that rupture may be restored by tendon transfers or grafts.

Destroyed, subluxed or dislocated metacarpophalangeal joints are frequently accompanied by ulna drift of the fingers. Relocation of the extensor mechanism over the center of the metacarpophalangeal joints after arthroplasty of these articulations usually results in improved position and function. Prosthetic replacement of severely destroyed joints, especially at the metacarpophalangeal level, with implants made of silicone rubber seems to be gaining acceptance.

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Flatt AE: The Care of the Rheumatoid Hand. St. Louis, CV Mosby Co., 1968

Niebauer JJ, Shaw JL, Doren WW: The silicone-dacron hinge prosthesis: design, evaluation and application. *Proceedings ASSH J Bone Joint Surg* 50A:634, 1968

### The Use of Compression Plates for Fractures

Compression plating of fractured long bones has now become an accepted part of the fracture surgeon's armamentarium. The method was devised by Professor Müller of Basle and a group of his colleagues. The plates are thicker and heavier than previously designed plates, with firm fixation to the bone by screws. The plate is fixed to one fragment of the fractured bone, reduction is achieved and a device is used to compress the fracture fragments together; then the plate is fixed to the other fragment. The method demands a clear understanding of various approaches to long bones and excellent surgical technique. Also, one should be familiar with the instrumentation and whole procedure before operating upon a patient. With anatomical reduction, healing takes place directly across the fracture site in the cortices, and resorption of bone has not been a problem. Normal vascularization can occur through the medullary canal.

The plates and fixation are strong enough so that no immobilization is used in fractures of the forearm and often not in the lower extremity, although balanced suspension is used for the first two weeks postoperatively. Although the plates are devised for all bones, we find their greatest use for fresh fractures in the forearm for non-union of forearm bones and humerus and rarely in comminuted fractures of the femur or non-union. We have not used them for fresh fractures in the tibia; rarely in non-union. When used in the lower extremities, weight-bearing should not be permitted for three months or longer. We would like to emphasize that excellent surgical technique is necessary, wide experience is demanded, and familiarization with the apparatus is a requisite for using the method upon a patient.

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Anderson LD: Compression plate fixation and the effect of different types of internal fixation in fracture healing. *J Bone Joint Surg* 47A:191-208, 1965

Mueller ME, Allgower M, Willenegger H: *Technique of Internal Fixation of Fractures*. New York City, Springer-Verlag, New York, Inc., 1965